

<b>Contract No. HY/2011/03 - Hong Kong- Zhuhai- Macao Bridge Hong Kong Link Road Section between Scenic Hill and Hong Kong Boundary Crossing Facilities Notifications of Environmental Quality Limits Exceedances</b>			Notification No.: 226 ver 1
<b>Date of Notification:</b> 3 June 2016			
<b>Works Inspected:</b> Not Applicable			
<b>Monitoring Location:</b> NEL & NWL			
<b>Parameter:</b> Ecology (Chinese White Dolphin Monitoring)			
<b>Action &amp; Limit Levels</b>			<b>Monitoring Results</b>
	North Lantau Social Cluster		The quarter of March 2016 – May 2016
	Action Level (AL)	Limit Level (LL)	
Northeast Lantau (NEL)	STG < 4.2 & ANI < 15.4	NEL: (STG < 2.4 & ANI <8.9) and	<b><u>STG = 0; ANI = 0</u></b>
Northwest Lantau (NWL)	STG < 6.9 & ANI < 31.3	NWL: (STG < 3.9 & ANI <17.9)	<b><u>STG = 0.98; ANI = 4.78</u></b>
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. STG means quarterly encounter rate of number of dolphin sightings.</li> <li>2. ANI means quarterly encounter rate of total number of dolphins.</li> <li>3. For North Lantau Social Cluster, AL will be triggered if either NEL or NWL falls below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.</li> <li>4. <b><i>Bold Italic</i></b> means AL exceedances.</li> <li>5. <b><i>Bold Italic with underline</i></b> means LL exceedances</li> </ol>			
<b>Possible reason for Limit Level Non-compliance:</b> <p>There was one Limit Level exceedance of dolphin monitoring for the quarterly monitoring data (between March 2016 – May 2016). According to the contractor's information, the marine activities undertaken for HKLR03 during the quarter of March 2016 – May 2016 included removal of surcharge materials, temporary drainage diversion, ground investigation and maintenance of silt curtain.</p> <p>There is no evidence showing the current LL non-compliance directly related to the construction works of HKLR03 (where the amounts of working vessels for HKLR03 have been decreasing), although the generally increased amount of vessel traffic in NEL during the impact phase has been partly contributed by HKLR03 works since October 2012. It should also be noted that reclamation work under HKLR03 (adjoining the Airport Island) situates in waters which has rarely been used by dolphins in the past, and the working vessels under HKLR03 have been travelling from source to destination in accordance with the Marine Travel Route to minimize impacts on Chinese White Dolphin (CWD). In addition, the contractor will implement proactive mitigation measures such as avoiding anchoring at Marine Department's designated anchorage site – Sham Shui Kok Anchorage (near Brothers Island) as far as practicable.</p> <p>According to Monitoring of Chinese White Dolphins in Southwest Lantau Waters – Fourth Quarterly Report (December 2015 to February 2016) which is available on ENPO's website, with their primary ranges centered in North and West Lantau waters, some individuals showed apparent range shifts or extensions to Southwest Lantau waters in 2015-16. For example, three individual dolphins (NL120, WL46 and WL221) indicated obvious shifts in their range use from NWL to West Lantau (WL) and Southwest Lantau (SWL) waters. Moreover, many individuals (e.g. NL212, NL260, WL200, SL55, WL232, WL237 and WL265) have extended their ranges from WL waters to SWL waters. It remains to be seen whether some of these individuals have permanently shifted their ranges away from their primary ranges in North Lantau, or begin to spend more times in SWL waters as part of their ranges.</p> <p>ENPO updated that the Hong Kong-Zhuhai-Macao Bridge Authority (HZMBA) for the Mainland section of Hong Kong-Zhuhai-Macao Bridge (HZMB) has commenced an interim survey on fisheries resources and CWD in the Mainland waters. ENPO presented the preliminary findings of the HZMBA interim survey on CWD sighting and photo-identification works which provide solid evidence that some CWD that were previously more often sighted in HK waters have expanded their ranges into the Mainland waters, and some with reduced usage in HK waters. These preliminary data were mentioned in Monitoring of Chinese White Dolphins in Southwest Lantau Waters – Fourth Quarterly Report (December 2015 to February 2016) which is available on ENPO's website.</p>			
<b>Actions taken/ to be taken:</b> <p><u>Inform the IEC, ENPO, ER/SOR and Contractor</u> The ETL informed IEC, ENPO, SOR and Contractor via email on 3 June 2016.</p> <p><u>Repeat statistical data analysis to confirm findings and check monitoring data:</u> A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. The two variables that were examined included the two periods (baseline and impact phases) and two locations (NEL and NWL). For the comparison between the baseline period and the present quarter (fourteenth quarter of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0019 and 0.0173 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline and present quarters</p>			

in both the average dolphin encounter rates of STG and ANI.

For comparison between the baseline period and the cumulative quarters in impact phase (i.e. first fourteen quarters of the impact phase being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.000019 and 0.000005 respectively. Even if the alpha value is set at 0.00005, significant differences were still detected in both the average dolphin encounter rates of STG and ANI (i.e. between the two periods and the locations).

Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences:

The AFCD monitoring data during March to May 2016 has been reviewed by the dolphin specialist. During the same quarter, no dolphin was sighted from 159.50 km of survey effort on primary lines in NEL, while two groups of two dolphins were sighted from 186.34 km of survey effort on primary lines in NWL. This review has confirmed that the extremely low occurrence of dolphins reported by the HKLR03 monitoring surveys in spring 2016 in NEL and NWL survey area is accurate.

#### **Recommendations/ mitigation measures/ actions if necessary:**

Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary:

All dolphin protective measures are fully and properly implemented in accordance with the EM&A Manual. According to the Marine Travel Route Plan, the travelling speed of vessels must not exceed 5 knots when crossing the edge of the proposed marine park. The Contractor will continue to provide training for skippers to ensure that their working vessels travel from source to destination to minimize impacts on Chinese White Dolphin and avoid anchoring at Marine Department's designated anchorage site - Sham Shui Kok Anchorage (near Brothers Island) as far as practicable. Also, it is recommended to complete the marine works of the Contract as soon as possible so as to reduce the overall duration of impacts and allow the dolphins population to recover as early as possible.

A meeting was held on 22 July 2016 with attendance of representative of Highways Department (HyD), ENPO, Resident Site Staff (RSS), Environmental Team (ET) and dolphin specialist for Contract Nos. HY/2010/02, HY/2011/03, HY/2012/07, HY/2012/08. Also, main Contractor for Contract Nos. HY/2012/08 attended the meeting. The discussion/recommendation as recorded in the minutes of the meeting, which might be relevant to HKLR03 Contract are summarized below.

It was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors.

The dolphin specialists of the projects confirmed that the CWD sighting around the North of Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP) has significantly decreased, and it was apparently related to the re-routing of high speed ferry (HSF) from Skypier.

It was reminded that the ETs shall keep reviewing the implementation status of the dolphin related mitigation measures and remind the contractor to ensure the relevant measures were fully implemented.

It was recommended that the marine works of HZMB projects should be completed as soon as possible so as to reduce the overall duration of impacts and allow the dolphins population to recover as early as possible.

It was also recommended that the marine works footprint (e.g., reduce the size of peripheral silt curtain) and vessels for the marine works should be reduced as much as possible, and vessels idling / mooring in other part of the North Lantau shall be avoided whenever possible.

It was suggested that the protection measures (e.g., speed limit control) for the proposed Brothers Marine Park (BMP) shall be brought forward as soon as possible before its establishment so as to provide a better habitat for dolphin recovery. It was noted that under the Regular Marine Travel Route Plan, the contractors have committed to reduce the vessel speed in BMP. HyD updated that the draft map of the proposed BMP was gazetted in February 2016. The ETs were reminded to update the BMP boundary in the Regular Marine Travel Route Plan.

There was a discussion on exploring possible further mitigation measures, for example, controlling the underwater noise. It was noted that the EIA reports for the projects suggested several mitigation measures, all of which have been implemented.

Reviewed by : Claudine Lee

Title : ET Leader



Date : 27 September 2016

Copied to : Supervising Officer, ENPO, IEC, EPD, Contractor

**Summary of Notifications of Summons and Prosecutions**

Total No. of Notifications of Summons / Prosecutions Received	No. of Notifications of Summons / Prosecutions Received during Reporting Period	Status of Notifications of Summons / Prosecutions
0	0	N/A